

LAYOUT PLAN
SCALE 1:500

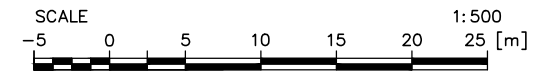
TABLE OF COORDINATES		
CO-ORDINATE POINTS	X-EASTING	Y-NORTHING
ST-00	420698.756	3071614.324
VC-00	420687.737	3071585.188
PS-00	420681.440	3071568.539
VG-00	420774.279	3071537.636
VG-01	420719.544	3071588.910

NOTES:

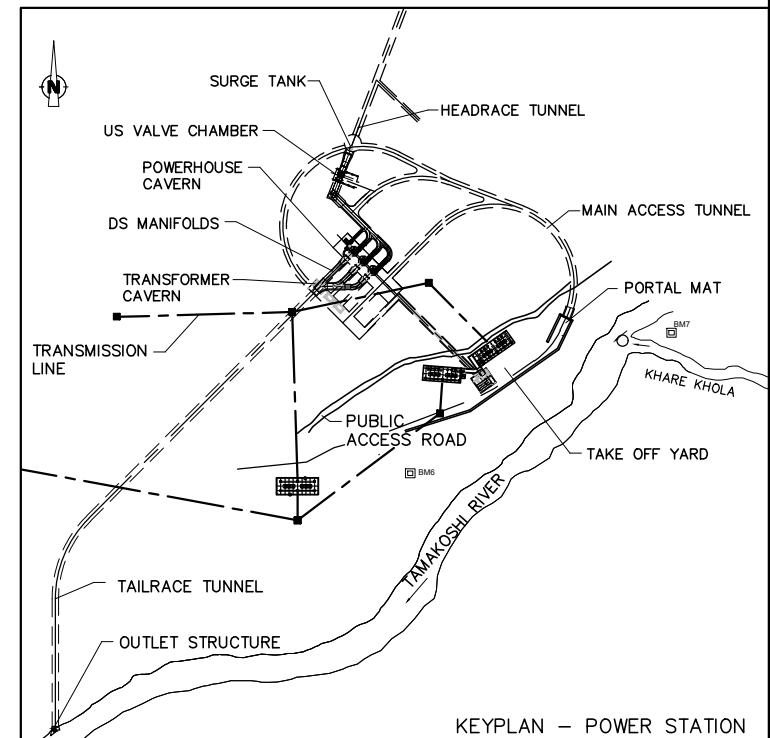
- ALL DIMENSIONS ARE IN METER [m] UNLESS OTHERWISE NOTED.
- ALL ELEVATIONS ARE ABOVE SEA LEVEL IN [masl].
- CO-ORDINATES BASED ON NATIONAL GEODETIC NETWORK SYSTEM (EVEREST 1830).

LEGEND:

- ◊▽ UNFINISHED TOP OF SLAB
◆▼ FINISHED FLOOR LEVEL
⊗ FIXPOINT-COORDINATE



DRAFT STATUS:
12.11.2018



Reference Drawings	
Drwg. No.	Title
31-00053-DD-4340-Q-1400	POWER STATION, GENERAL, LAYOUT

Revisions			
	Name	Date	Notes



TAMAKOSHI V HYDROELECTRIC PROJECT
PROJECT DEVELOPMENT DEPARTMENT
ENGINEERING SERVICES DIRECTORATE
NEPAL ELECTRICITY AUTHORITY



CONSULTING ENGINEERS
BAD VILBEL, GERMANY

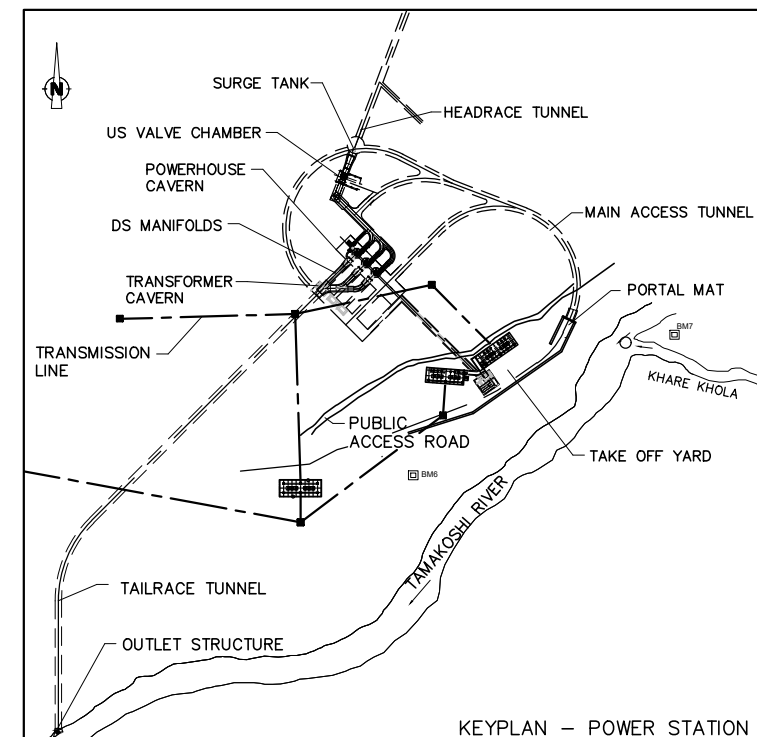
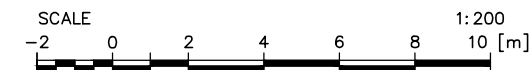
TAMAKOSHI V HYDROELECTRIC PROJECT DETAILED ENGINEERING DESIGN

	Name	Date	DETAILED DESIGN <u>SURGE TANK</u> <u>GENERAL</u> LAYOUT PROJECT DRAWING
Prepared	B. Khadka	31.07.17	
Drawn	B. Khadka	31.07.17	
Checked	Roloff		
Approved	Dr. Moeller		
Replaces Drwg. No: 31-00053-DD-4321-Y-0000_			
<u>CAD- File No.:</u>			
Scale A3: 1:500			Drwg. No.: 31-00053-DD-4321- Q 1330 REV. —

DRAFT STATUS:
29.10.2018

NOTES:

1. ALL DIMENSIONS ARE IN METER [m] UNLESS OTHERWISE NOTED.
2. ALL ELEVATIONS ARE ABOVE SEA LEVEL IN [masl].
3. CO-ORDINATES BASED ON NATIONAL GEODETIC NETWORK SYSTEM (EVEREST 1830).
4. EXTERNAL DIMENSIONS REFER TO THE SHOTCRETE LINE = THE CLEAR PROFILE OF THE STRUCTURE. THE EXCAVATION LINE HAS TO BE ADJUSTED ACCORDING TO THE ACTUAL GEOLOGICAL CONDITIONS.
5. ROCK SUPPORT MEASURES NOT SHOWN.
6. ROCK DRAINAGE SYSTEM WITH SYSTEMATIC DRAIN HOLES NOT SHOWN.



Reference Drawings

Drwg. No.	Title
31-00053-DD-4321-1332	SURGE TANK, LAYOUT AND SECTIONS

Revisions	Name	Date	Notes



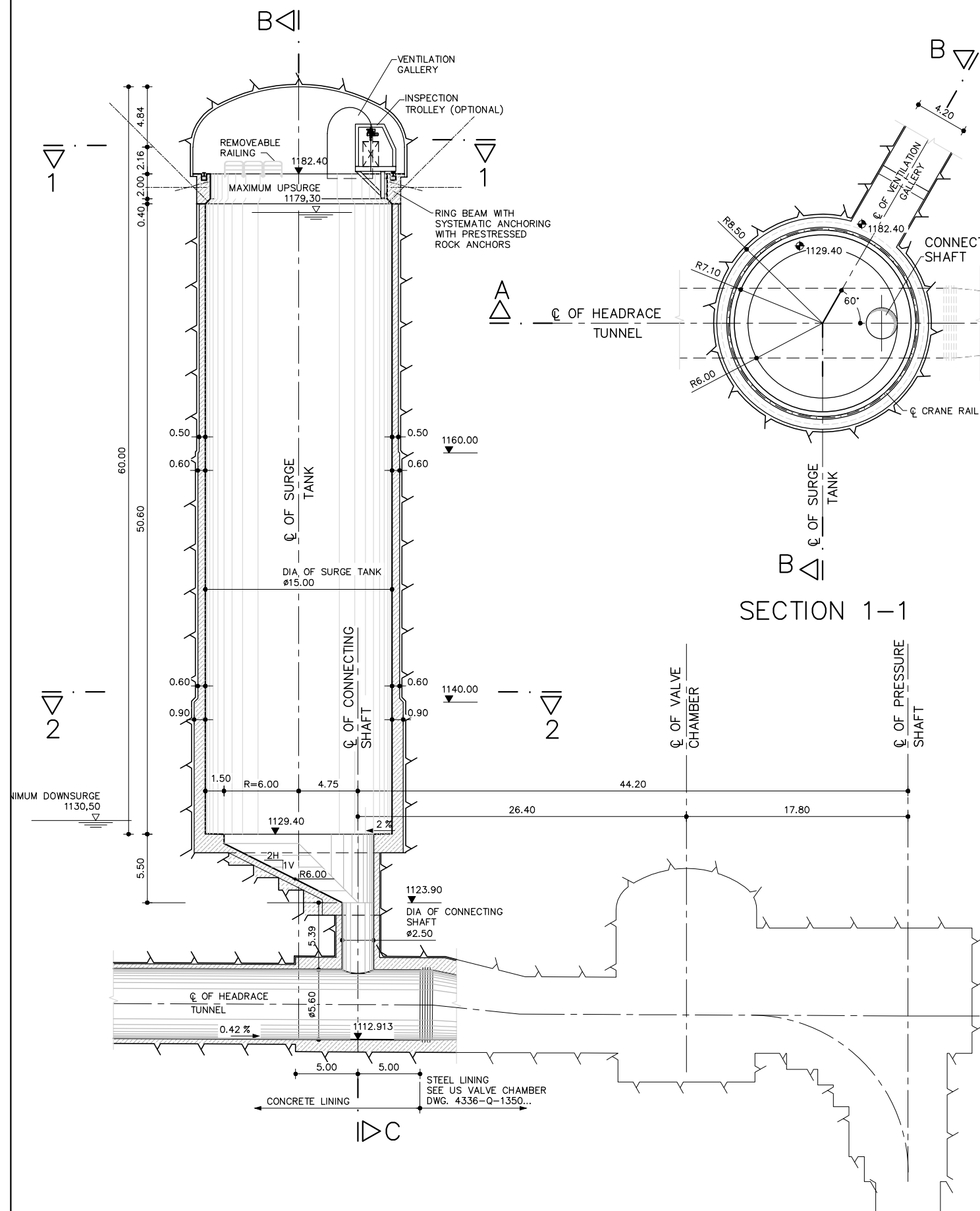
TAMAKOSHI V HYDROELECTRIC PROJECT
PROJECT DEVELOPMENT DEPARTMENT
ENGINEERING SERVICES DIRECTORATE
NEPAL ELECTRICITY AUTHORITY



CONSULTING ENGINEERS
BAD VILBEL, GERMANY

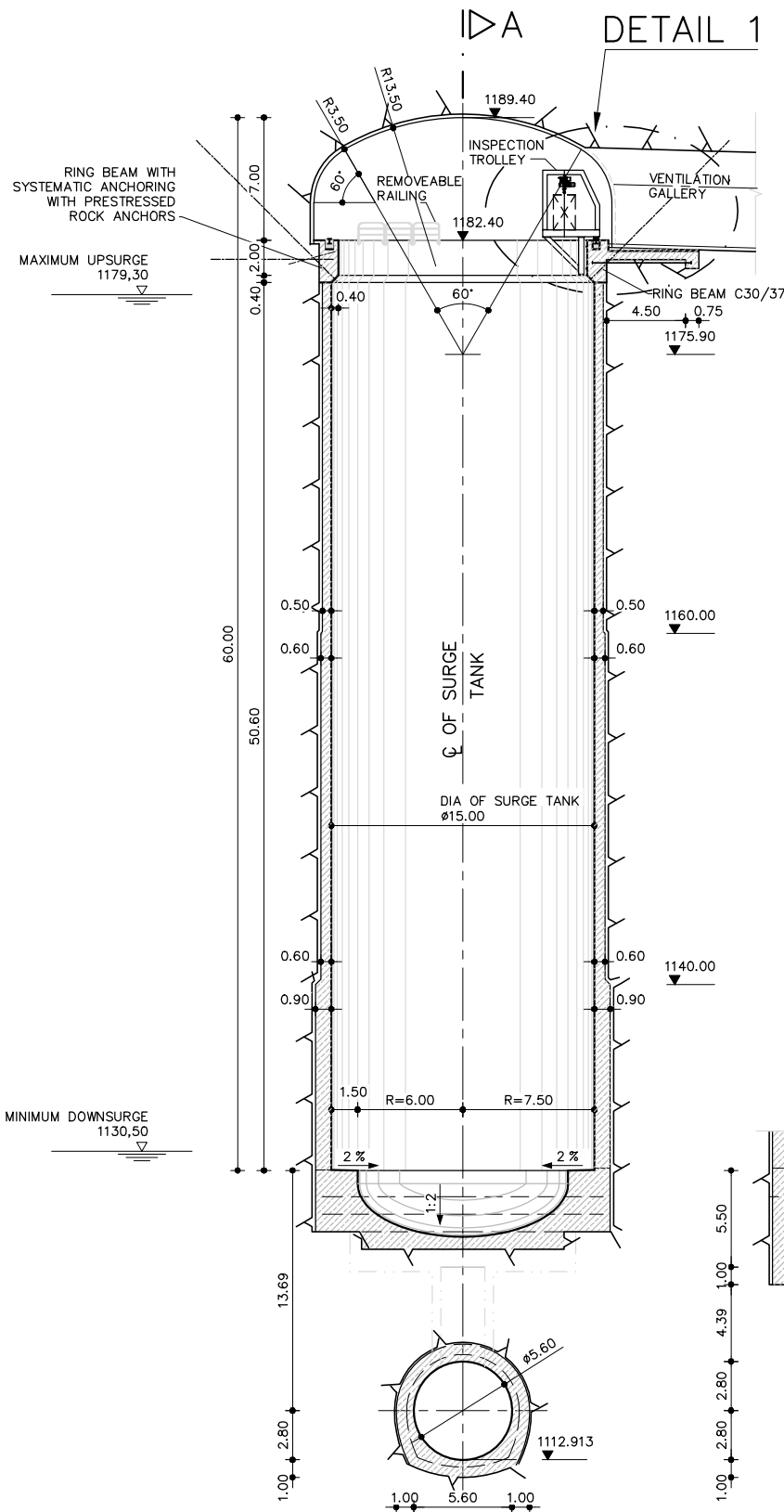
TAMAKOSHI V HYDROELECTRIC PROJECT DETAILED ENGINEERING DESIGN

	Name	Date	DETAILED DESIGN <u>SURGE TANK</u> <u>SURGE TANK SHAFT</u> SECTION A, 1 AND 2 PROJECT DRAWING
Prepared	B. Khadka	31.07.17	
Drawn	B. Khadka	31.07.17	
Checked	Roloff		
Approved	Dr. Moeller		
Replaces Drwg. No: 31-00053-DD-4336-Y-0000_			
CAD- File No.:			
Scale A3:	1: 400	Drwg. No.: 31-00053-DD-4321- Q 1331	REV. -

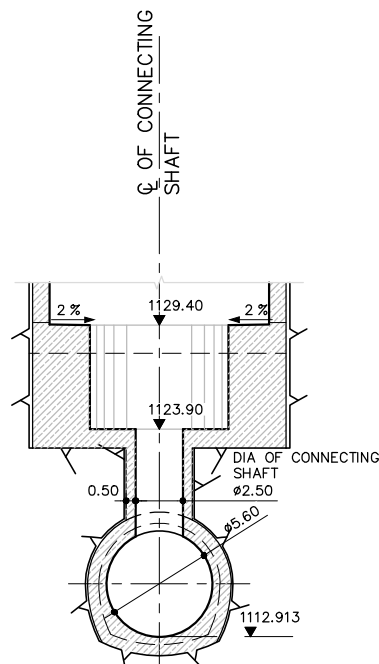


LEGEND:

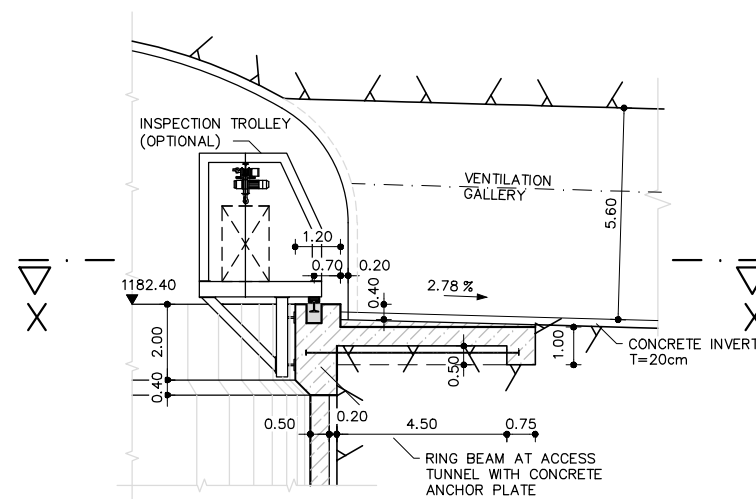
- CONCRETE CLASS C1 - FIRST STAGE CONCRETE C25/30
- CONCRETE CLASS C2 - FIRST STAGE CONCRETE C30/37
- CONCRETE CLASS F - BLINDING CONCRETE C12/15
- CONSTRUCTION JOINTS
- CHEQUERED PLATES
- UNFINISHED TOP OF SLAB
- FINISHED FLOOR LEVEL
- FIXPOINT-COORDINATE



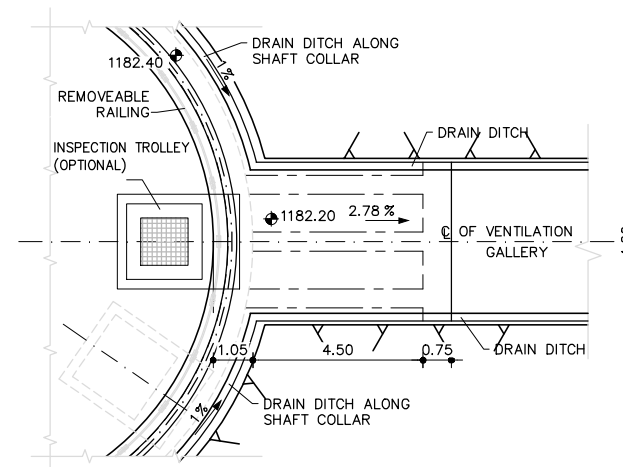
SECTION B-B
SCALE 1:400



SECTION C-C
SCALE 1:400



DETAIL 1
SCALE 1:200



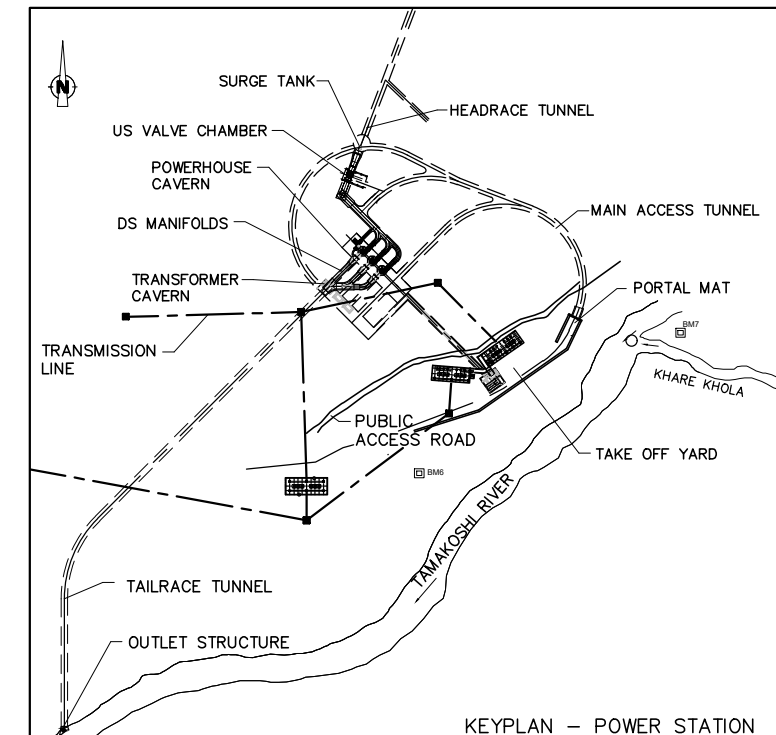
SECTION Y-Y
SCALE 1:200

LEGEND:

- CONCRETE CLASS C1 – FIRST STAGE CONCRETE C25/30
- CONCRETE CLASS C2 – FIRST STAGE CONCRETE C30/37
- CONCRETE CLASS F – BLINDING CONCRETE C12/15
- CONSTRUCTION JOINTS
- CHEQUERED PLATES
- UNFINISHED TOP OF SLAB
- FINISHED FLOOR LEVEL
- FIXPOINT-COORDINATE

NOTES:

- ALL DIMENSIONS ARE IN METER [m] UNLESS OTHERWISE NOTED.
- ALL ELEVATIONS ARE ABOVE SEA LEVEL IN [masl].
- CO-ORDINATES BASED ON NATIONAL GEODETIC NETWORK SYSTEM (EVEREST 1830).
- EXTERNAL DIMENSIONS REFER TO THE SHOTCRETE LINE = THE CLEAR PROFILE OF THE STRUCTURE. THE EXCAVATION LINE HAS TO BE ADJUSTED ACCORDING TO THE ACTUAL GEOLOGICAL CONDITIONS.
- ROCK SUPPORT MEASURES NOT SHOWN.
- ROCK DRAINAGE SYSTEM WITH SYSTEMATIC DRAIN HOLES NOT SHOWN.



Reference Drawings

Drwg. No.	Title
31-00053-DD-4321-1331	SURGE TANK, LAYOUT AND SECTIONS

Revisions	Name	Date	Notes



TAMAKOSHI V HYDROELECTRIC PROJECT
PROJECT DEVELOPMENT DEPARTMENT
ENGINEERING SERVICES DIRECTORATE
NEPAL ELECTRICITY AUTHORITY



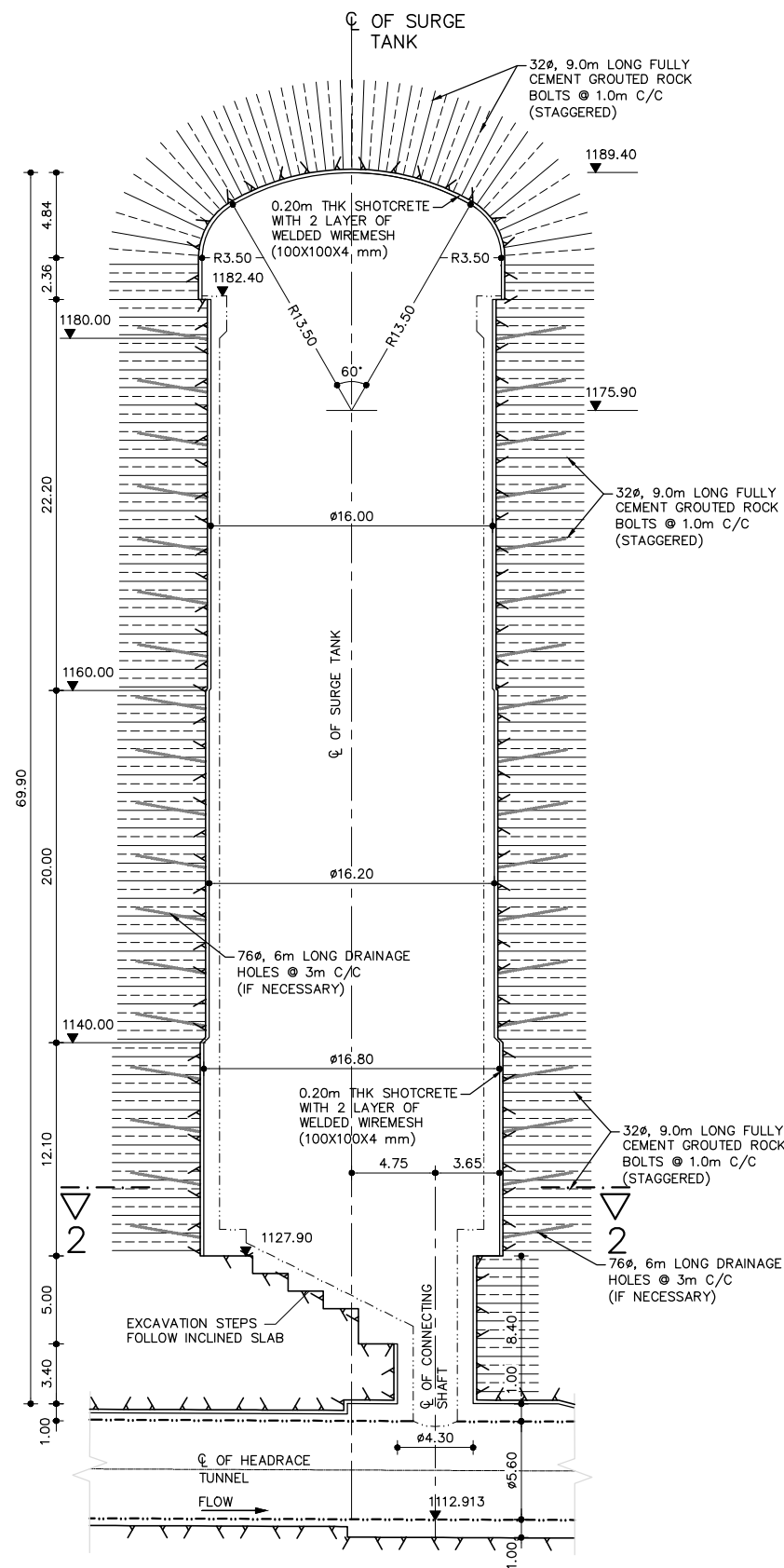
CONSULTING ENGINEERS
BAD VILBEL, GERMANY

TAMAKOSHI V HYDROELECTRIC PROJECT DETAILED ENGINEERING DESIGN

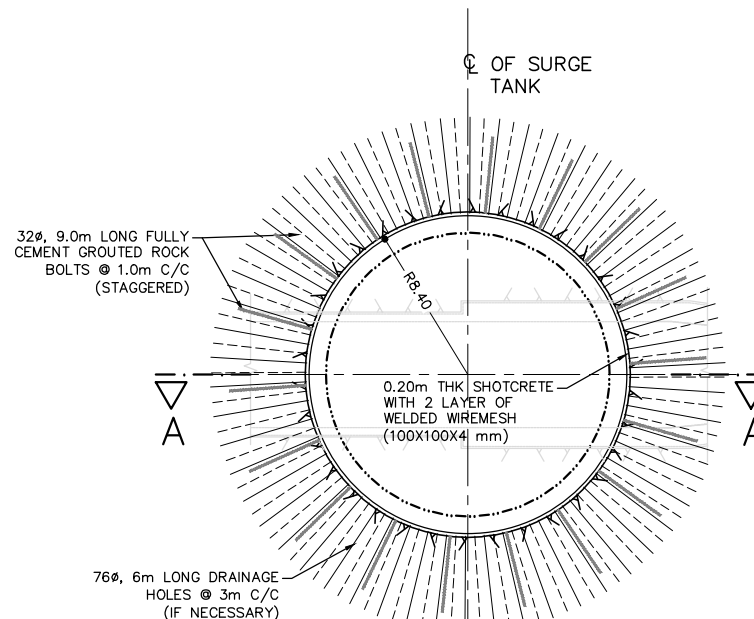
Name	Date	DETAILS
Prepared B. Khadka	31.07.17	SURGE TANK
Drawn B. Khadka	31.07.17	SURGE TANK SHAFT
Checked Roloff		CROSS SECTIONS B, C AND DETAILS
Approved Dr. Moeller		PROJECT DRAWING
Replaces Drwg. No: 31-00053-DD-4336-Y-0000_		
CAD- File No.:		
Scale A3: 1:400; 1:200	Drwg. No.: 31-00053-DD-4321-Q 1332	REV. -

DRAFT STATUS:
29.10.2018

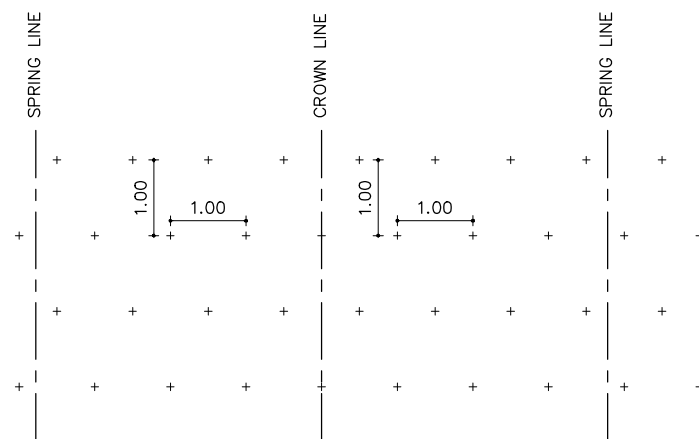
	Name	Date	DETAILED DESIGN <u>SURGE TANK</u> <u>SURGE TANK SHAFT</u> EXCAVATION DETAILS PROJECT DRAWING
Prepared	R. Shrivastava	21.09.18	
Drawn	A. K. Basu	21.09.18	
Checked	Roloff	21.09.18	
Approved	Dr. Moeller	21.09.18	
Replaces Drwg. No: 31-00053-DD-4336-Y-0000_-			
<u>CAD- File No.:</u>			
Scale A3: 1: 400			Drwg. No.: 31-00053-DD-4321- S 1335
			REV. -



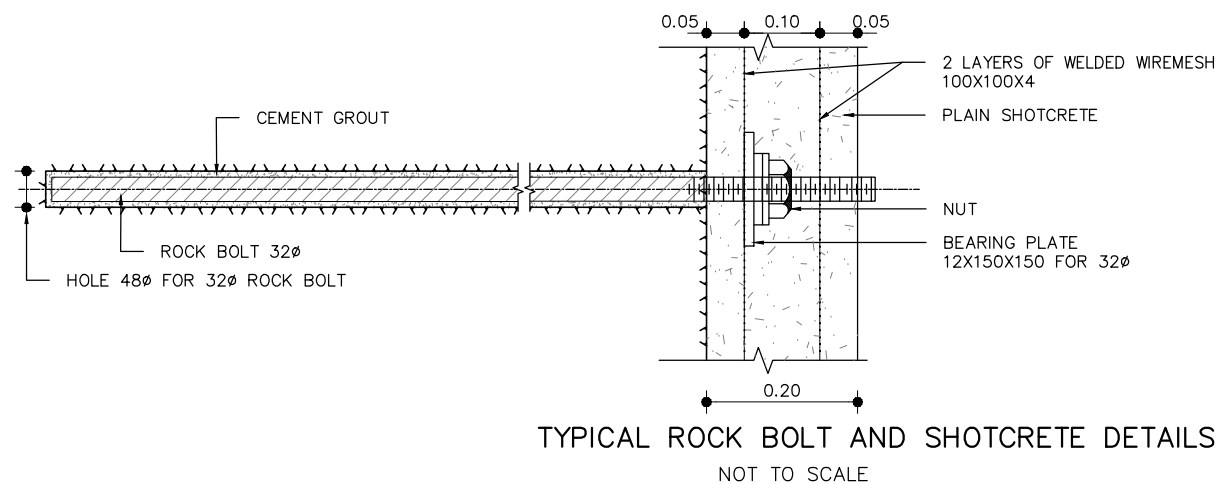
SECTION A-A
ROCK SUPPORT DETAIL



SECTION 2-2



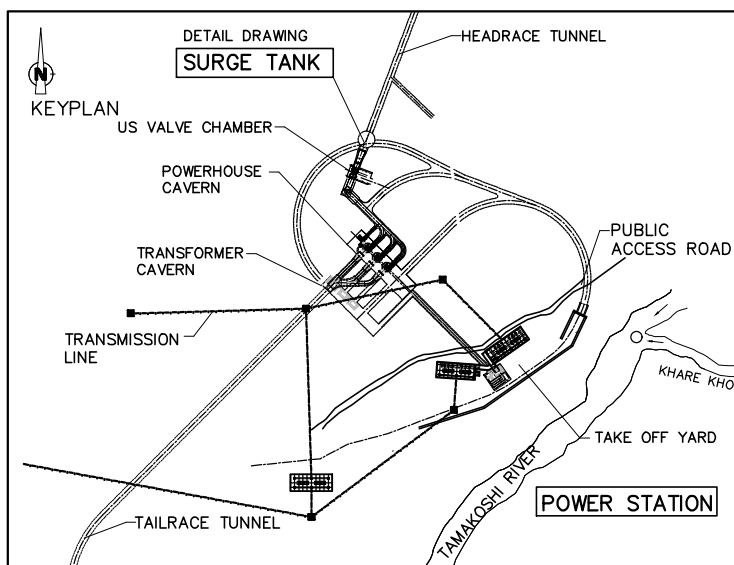
TYPICAL DETAILS OF ROCK BOLTS IN CROWN
(DEVELOPED VIEW)
NOT TO SCALE



TYPICAL ROCK BOLT AND SHOTCRETE DETAILS
NOT TO SCALE

NOTES:

1. ALL DIMENSIONS ARE IN METER [m] UNLESS OTHERWISE NOTED.
2. ALL ELEVATIONS ARE ABOVE SEA LEVEL IN [masl].
3. EXTERNAL DIMENSIONS REFER TO THE SHOTCRETE LINE = THE CLEAR PROFILE OF THE STRUCTURE. THE EXCAVATION LINE HAS TO BE ADJUSTED ACCORDING TO THE ACTUAL GEOLOGICAL CONDITIONS.
4. ALL SHOTCRETE SHALL PLAIN SHOTCRETE WITH WIREMESH AS ASSIGNED TO ROCK SUPPORT CLASS.
5. ROCK BOLTS SHALL HAVE THE FOLLOWING CHARACTERISTICS:
 - DIA. 32 MM
 - YIELD STRENGTH 500 N/MM²
 - MAXIMUM TENSILE CAPACITY 349 KN
6. ROCK SUPPORT MEASURES SHOWN ON THIS DRAWING ARE PRELIMINARY ONLY. FINAL ARRANGEMENT OF ROCK SUPPORT (SHOTCRETE THICKNESSES; LENGTH, ORIENTATION AND GRID OF ROCK BOLTS) HAVE TO BE ADOPTED TO ACTUAL GEOTECHNICAL CONDITIONS, SUBJECT TO AGREEMENT BETWEEN OWNER AND CONTRACTOR.
7. 10 NOS. PRESTRESSED ROCK ANCHORS WITH A LENGTH OF 20 M AND A WORKING LOAD OF 1,000 KN HAVE TO BE AVAILABLE ON SITE FOR UNEXPECTED GEOTECHNICAL CONDITIONS.



Reference Drawings

Drwg. No.	Title
31-00053-DD-4321-1332	SURGE TANK, LAYOUT AND SECTIONS

Revisions	Name	Date	Notes



TAMAKOSHI V HYDROELECTRIC PROJECT
PROJECT DEVELOPMENT DEPARTMENT
ENGINEERING SERVICES DIRECTORATE
NEPAL ELECTRICITY AUTHORITY



LAHMEYER INTERNATIONAL
CONSULTING ENGINEERS
BAD VILBEL, GERMANY

TAMAKOSHI V HYDROELECTRIC PROJECT DETAILED ENGINEERING DESIGN

Name	Date	DETAILLED DESIGN
Prepared R. Shrivastava	21.09.18	SURGE TANK SURGE TANK SHAFT ROCK SUPPORT DETAILS
Drawn A. K. Basu	21.09.18	
Checked Roloff	21.09.18	
Approved Dr. Moeller	21.09.18	
Replaces Drwg. No: 31-00053-DD-4336-Y-0000_		
CAD- File No.:		PROJECT DRAWING
Scale A3: 1:400		
Drwg. No.: 31-00053-DD-4321-	S 1336	REV. -

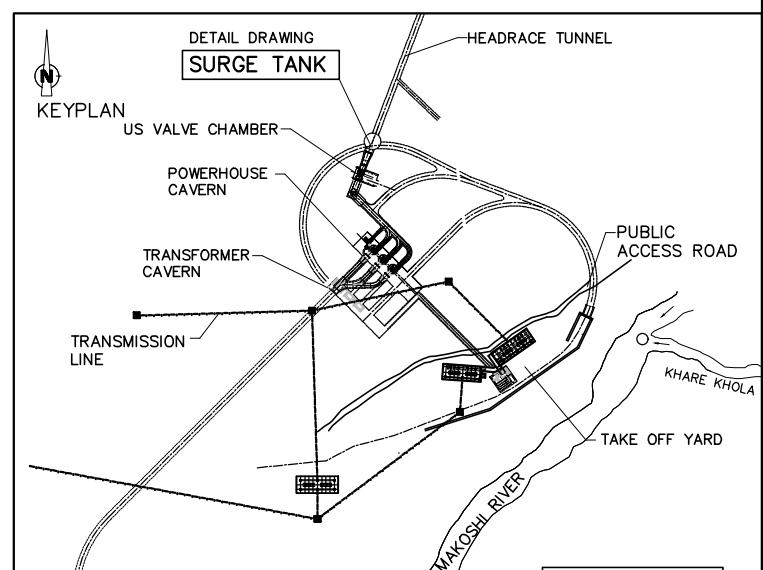
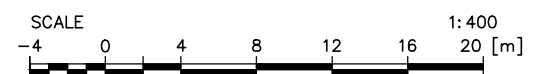
DRAFT STATUS:
21.10.2018

NOTES:

1. ALL DIMENSIONS ARE IN METER [M] UNLESS OTHERWISE NOTED.
2. NO DIMENSION SHALL BE MEASURED FROM THE DRAWING. ONLY WRITTEN DIMENSION SHALL BE FOLLOWED.
3. THIS DRAWING REFERS TO GROUTING DETAILS IN SURGE TANK.
4. GROUT PRESSURE FOR CONTACT GROUTING WILL BE ABOUT 2.5KG/CM².
5. GROUT PRESSURE FOR CONSOLIDATION GROUTING WILL BE ABOUT 5.0KG/CM².

LEGEND:

CONCRETE CLASS C1 – CONCRETE C25/30



Reference Drawings

Drwg. No.	Title
31-00053-DD-4321-1332	SURGE TANK, LAYOUT AND SECTIONS

Revisions	Name	Date	Notes



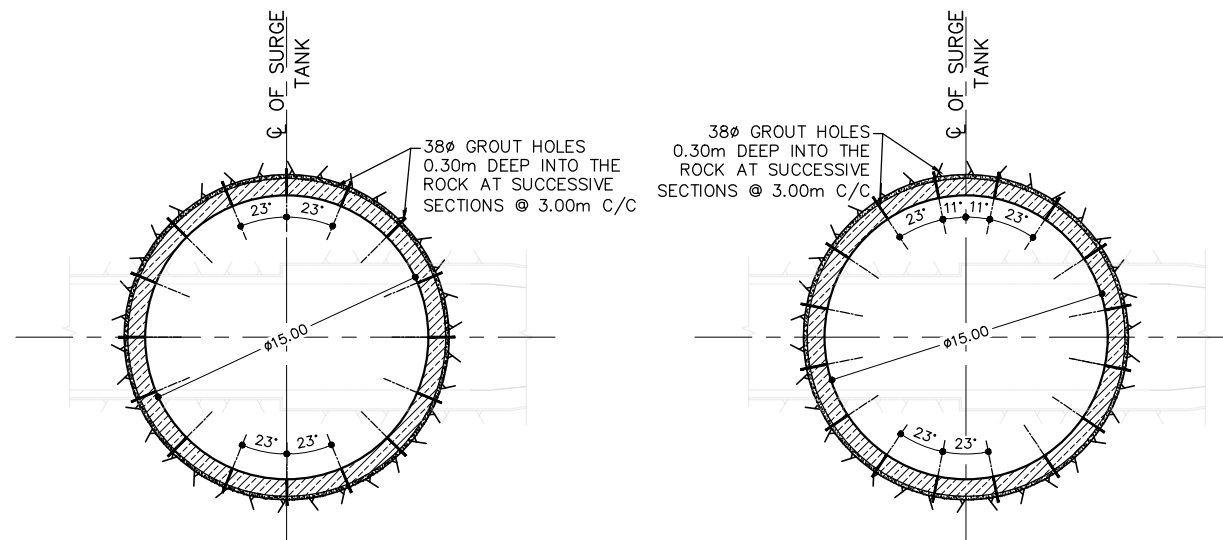
TAMAKOSHI V HYDROELECTRIC PROJECT
PROJECT DEVELOPMENT DEPARTMENT
ENGINEERING SERVICES DIRECTORATE
NEPAL ELECTRICITY AUTHORITY



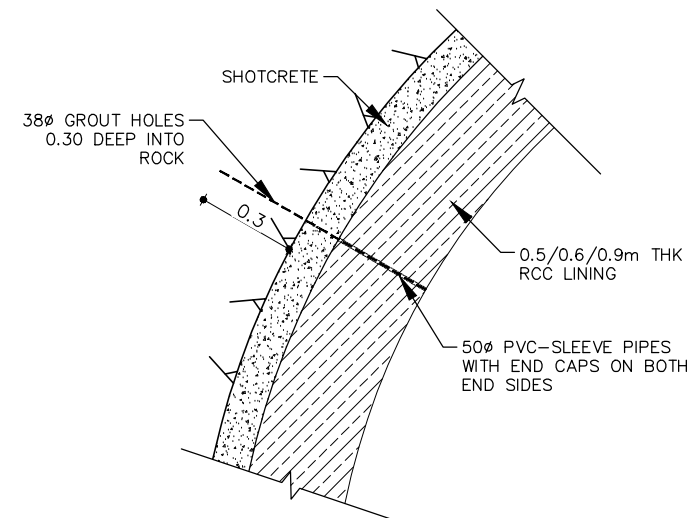
CONSULTING ENGINEERS
BAD VILBEL, GERMANY

TAMAKOSHI V HYDROELECTRIC PROJECT DETAILED ENGINEERING DESIGN

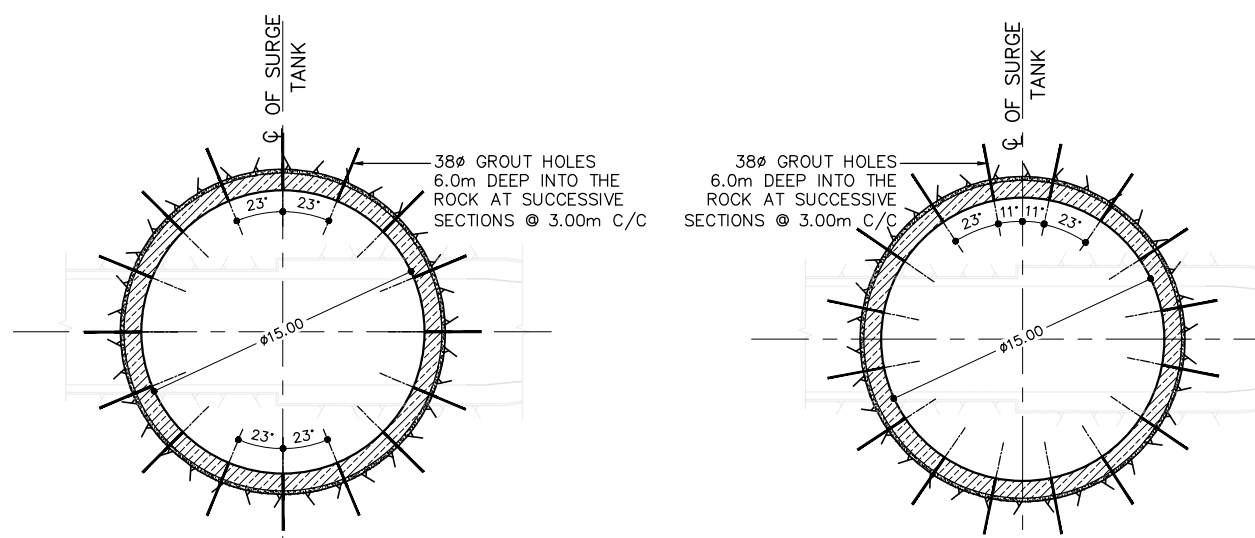
Name	Date	DETAILLED DESIGN
Prepared R. Shrivastava	21.09.18	SURGE TANK SURGE TANK SHAFT GROUTING DETAILS
Drawn A. K. Basu	21.09.18	
Checked Roloff	21.09.18	
Approved Dr. Moeller	21.09.18	
Replaces Drwg. No: 31-00053-DD-4336-Y-0000_		
CAD- File No.:		PROJECT DRAWING
Scale A3: 1:400		
Drwg. No.: 31-00053-DD-4321-	S 1337	REV. -



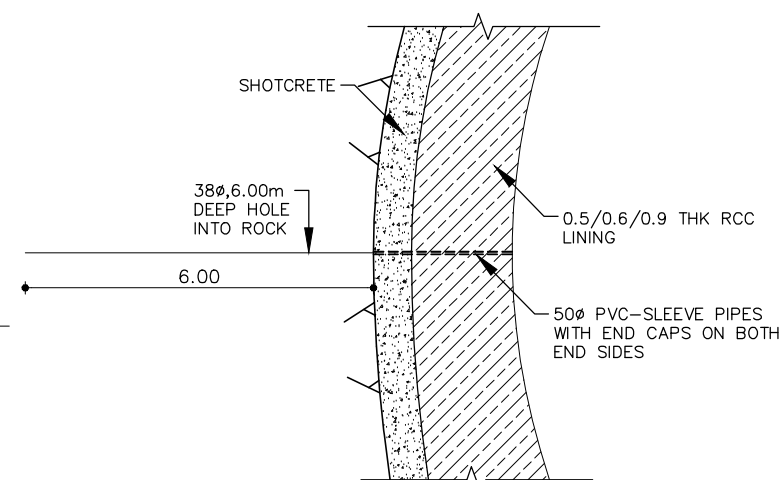
ALTERNATE SECTION 3.00m APART
CONTACT GROUTING



TYPICAL DETAILS OF
CONTACT GROUTING
NOT TO SCALE



ALTERNATE SECTION 3.00m APART
CONSOLIDATION GROUTING



TYPICAL DETAILS OF
CONSOLIDATION GROUTING
NOT TO SCALE



	Name	Date	DETAILED DESIGN	
Prepared	R. Shrivastava	27.09.18	<u>SURGE TANK</u> <u>SURGE TANK</u> <u>SHAFT</u> INSTRUMENTATION DETAILS PROJECT DRAWING	
Drawn	A. K. Basu	27.09.18		
Checked	Roloff	27.09.18		
Approved	Dr. Moeller	27.09.18		
Replaces Drawg. No:				
<u>CAD- File No.:</u>				
Scale A3: 1:400			Drawg. No.: 31-00053-DD-4321- S 1338	REV. —



- NOTES TO INSTRUMENTATION:

1. EACH EXTENSOMETER HEAD SHALL BE EQUIPPED WITH A GEODETIC SURVEY POINT.
2. TENDONS IF INSTALLED SHALL BE EQUIPPED WITH A LOAD CELL.
3. LOAD CELLS SHALL BE INSTALLED ON ANCHORS THAT ARE AT AS INDICATED OR NEAR THE MONITORING SECTIONS.
4. IF NICHES PROVIDED FOR EXTENSOMETER AT FACE WALLS THOSE SHALL BE EQUIPPED WITH A BEACON TO ALLOW GEODETIC SURVEY.
5. CONVERGENCY SECTIONS AT INTERSECTING TUNNELS SHALL BE LOCATED AT 2 m DISTANCE.

NOTES:

1. ALL DIMENSIONS ARE IN METER [m] UNLESS OTHERWISE NOTED.
2. ALL ELEVATIONS ARE ABOVE SEA LEVEL IN [masl].
3. CABLE FROM INDIVIDUAL INSTRUMENTS AT DIFFERENT LOCATIONS WILL BE CONNECTED TO SWITCH BOXES FOR OBSERVING DATA.
4. CABLES WILL BE PROVIDED IN CONDUITS AND PROTECTIVE COVER WILL BE PROVIDED FOR INSTRUMENTS.

LEGEND:

MULTI-POINT BOREHOLE EXTENSOMETER



Revisions			
	Name	Date	Notes



TAMAKOSHI V HYDROELECTRIC PROJECT
PROJECT DEVELOPMENT DEPARTMENT
ENGINEERING SERVICES DIRECTORATE
NEPAL ELECTRICITY AUTHORITY

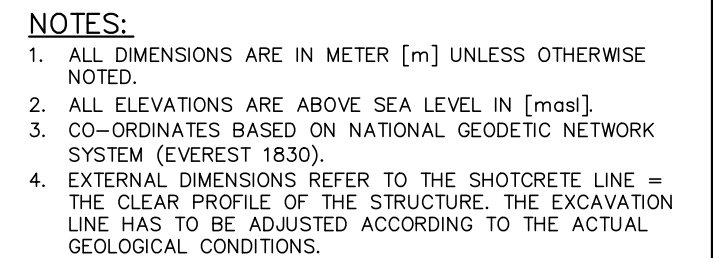






CONSULTING ENGINEERS
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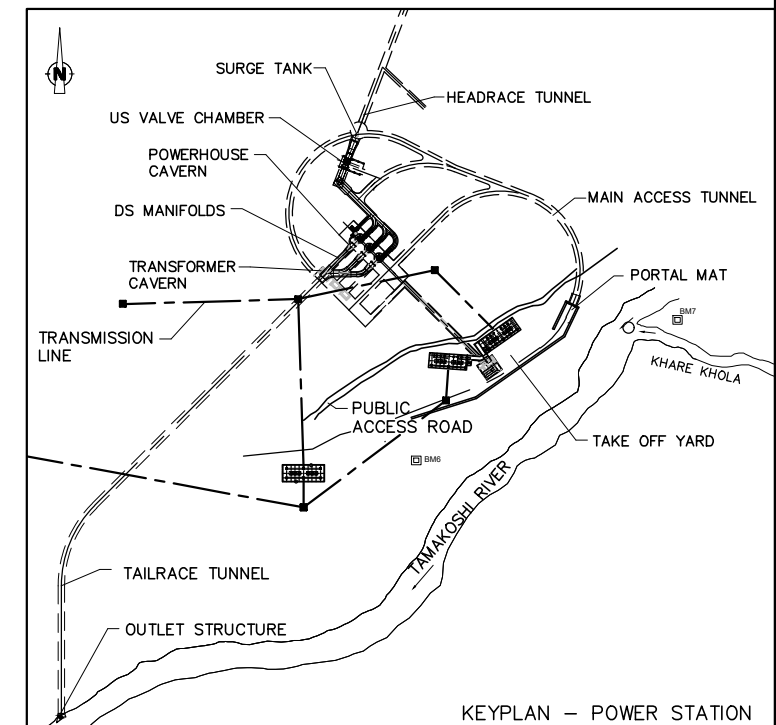
TAMAKOSHI V HYDROELECTRIC PROJECT

DETAILED ENGINEERING DESIGN



	Name	Date	DETAILED DESIGN	
Prepared	R. Shrivastava	27.09.18	<u>SURGE TANK</u> <u>SURGE TANK SHAFT</u> <u>VAULT</u> INSTRUMENTATION DETAILS PROJECT DRAWING	
Drawn	A. K. Basu	27.09.18		
Checked	Roloff	27.09.18		
Approved	Dr. Moeller	27.09.18		
Replaces Drwg. No:				
CAD— File No.:				
Scale A3: 1:250			Drwg. No.: 31—00053—DD—4321—	S 1339
			REV.	—



 CONCRETE CLASS C1 – FIRST STAGE CONCRETE C25/30
 UNFINISHED TOP OF SLAB
 FINISHED FLOOR LEVEL
 FIXPOINT–COORDINATE



Reference Drawings				
Drwg. No.			Title	
31-00053-DD-4321-1330			SURGE TANK, GENERAL, LAYOUT	
Revisions				
	Name	Date	Notes	

		TAMAKOSHI V HYDROELECTRIC PROJECT PROJECT DEVELOPMENT DEPARTMENT ENGINEERING SERVICES DIRECTORATE NEPAL ELECTRICITY AUTHORITY	
 LAHMEYER INTERNATIONAL		CONSULTING ENGINEERS BAD VILBEL, GERMANY	
<h2 style="text-align: center;">TAMAKOSHI V HYDROELECTRIC PROJECT</h2> <h3 style="text-align: center;">DETAILED ENGINEERING DESIGN</h3>			
	Name	Date	DETAILED DESIGN SURGE TANK <u>VENTILATION GALLERY</u> LONGITUDINAL SECTION DETAIL PROJECT DRAWING
Prepared	B. Khadka	31.07.17	
Drawn	B. Khadka		
Checked	Roloff		
Approved	Dr. Moeller		
Replaces Drwg. No: 31-00053-DD-4336-Y-0000_-			
CAD- File No.:			
Scale A3: 1:500		Dwg. No.: 31-00053-DD-4325-Q 1340	REV. —